STATE OF NORTH CAROLINA
DEPARTMENT OF ADMINISTRATION
PURCHASE AND CONTRACT DIVISION

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Superseding
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SPECIFICATION FOR SWEEPERS, POWER

(This specification is released for procurement purposes until revised or rescinded).

SCOPE

This specification covers gas, LP, and diesel driven power sweepers used in driveways, warehouses, and parking lots where periodic sweeping is required. This specification does not cover all types and sizes of sweepers that are commercially available, but only those types and sizes most frequently required by state agencies & institutions. (Note: This is not a street sweeper.)

I. CLASSIFICATION

The power sweeper shall be a heavy-duty riding type of the following sizes:

Size 1 - 60" Min. swath width including one side brush
Size 2 - 66" Min. swath width including one side brush

II. APPLICABLE STANDARDS

The following document of issue in effect on the date of the Invitation for Bids shall form a part of this specification:

Federal Occupational Safety and Health Act OSHA)
U.S. Department of Labor
200 Constitution Avenue N.W.
Washington, D.C. 20210

III. REQUIREMENTS

A. GENERAL REQUIREMENTS

All machines shall be designed for continuous duty applications and constructed of appropriate first quality materials. All exposed metal shall be corrosion resistant or covered with suitable corrosion resistant protective coatings. Machine shall be essentially quiet and free from objectionable vibration in operation, finished in a workmanship manner and conform to the best recognized commercial practices. Each machine and all accessories shall be new, of current design and a standard product of the manufacturer.

B. SPECIFIC REQUIREMENTS

Table 1 - Performance Requirements

Performance Requirement	Size 1	Size 2
Sweep Swath (With one side brush)	60"	66"
Peak Horsepower at maximum RPM - Gasoline	44	60
Peak Horsepower at maximum RPM - LPG	44	60
Peak Horsepower at maximum RPM - Diesel	37	44
Propulsion Speed (MPH)	8	10
Hopper Capacity (Cu. Ft.)	14	27
Dump Height	60"	63"
Filter Area (Sq. Ft.)	74	120

Note: Values shown are minimum requirements unless otherwise specified

1. Performance

Sweepers furnished under this specification shall conform to the requirements of Table 1. Sweepers shall effectively sweep and retain dust, dirt, and debris while operated at the sweeping speed recommended by the manufacturer, along hard surfaced areas, gutters, and ramps. When tested as specified in miscellaneous item pickup test, the sweeper shall, in a one-way pass, pick up and retain the specified items while traveling at no less than 5 mph. The sweeper shall show no evidence of deformation, fracture, or failure of any part or component. The sweeper shall be capable of passing over metal obstructions extending 2" above a level surface while sweeping at the sweeping speed specified. It shall be capable of negotiating speed humps while sweeping. (The sweeping system and hopper dump shall each be independently operable.)

2. Gradeability

The intended use of the sweepers covered by this specification may require that the machine sweep multilevel parking decks. Under such circumstances, the machine as furnished shall be fully capable of sweeping ramps in user's deck in the uphill direction with all sweeping brushes and vacuum system blower at manufacturer's recommended speeds and performing properly, without the engine lugging such that its RPM falls below the manufacturer's recommended value or range.

When gradeablility would be a factor in determining the suitability of machine for its intended use, the State at its option may request a test of the exact model of machine offered. Such test would be performed by bidder or bidder's representative, before award of contract, at user's site, free of charge to the State, in a timely manner, and on a schedule approved by the using agency. The test would consist of operating the properly tuned and adjusted machine in its sweeping mode while traveling uphill on the user's most severe ramp while the engine and sweeping functions are observed. Debris for the machine to sweep may be applied to the ramp in accordance with Section III.B.1 of this specification or in any other reasonable manner. If the machine does not perform the gradeability test in a manner acceptable to the State, the machine may be disqualified.

3. Safety Provisions

All moving parts, parts subject to high temperature, and electrical components that are of such nature or so located as to become a hazard to operating personnel, shall be insulated, fully enclosed, or guarded. Operator's platform and foot operated controls shall be provided with non-skid surfaces. Operator shall have a clear and unobstructed view in all directions.

a) Noise Limits. The sweeper shall be furnished with all applicable equipment and accessories as required by OSHA. The successful bidder shall be responsible for notifying the owner of the noise level of the sweeper. Noise level must comply with OSHA Requirements.

b) Horn. An electric-actuated horn shall be provided. The sound level of the horn shall be noticeably greater than the sound level of the sweeper operating at full power.

c) An alarm system shall be provided to alert the operator to excessive temperature or smoke in the hopper or dust control system.

d) A minimum five (5) pound ABC type fire extinguisher shall be provided and appropriately mounted in a location convenient to the operator.

4. Construction Components

a) Frame. Frame shall withstand distortion and damage under the maximum loads and stresses encountered in sweeping operations.

b) Housing. The main brush and brush mounting components shall be enclosed in a sturdy sheet metal housing. The sides and rear of the housing shall be equipped with wear and tear resistant skirts or flaps with sufficient flexibility to provide an efficient dust seal between the housing and the surface to be swept. Where required, seals shall be provided to confine the vacuum system airflow. The housing shall be either readily removable from the frame or shall be provided with dustproof doors that permit rapid and easy access for the removal, maintenance, and repair of the components within the housing. The housing shall be designed to permit dust, dirt, and debris up to 2½" in height to pass into the main brush housing area.

c) Engine. The engine shall be water-cooled, 4-stroke cycle, industrial or automotive type of a commercial design that has been proven to be satisfactory in extensive use and for which repair parts are readily obtainable. The engine for any size sweeper shall have not less than two cylinders. The engine shall have sufficient power to satisfactorily operate the sweeper with all sweeping systems engaged.

The Engine shall be fueled by gasoline, L.P.G., or diesel as specified in the Invitation for Bids.

(1) Engine Battery. The battery shall be the manufacturer's standard equipment and will be capable of starting the engine in temperatures as low as -10°F.

(2) Lubricating Oil Filter. The engine lubricating oil system for sweepers shall include a standard type filter mounted in an accessible location for replacement of the element. The element size shall be that recommended by the filter manufacturer for the particular engine so as to achieve maximum filtration efficiency.

d) Power Transmission System. The sweeper shall be equipped with a heavy-duty hydrostatic or hydraulic drive system to transmit power to the drive wheels. The drive shall include provisions for forward and reverse travel. Belt or roller chain drive not acceptable. A hydraulic pump tow valve which allows towing of the sweeper without damage to the hydraulic pump shall be provided.

e) Steering. The sweeper shall be equipped with automotive type steering mechanism, with sufficient reduction ratio to allow adequate directional control. Adjustments to compensate for wear shall be provided.

f) Wheels. Wheels shall be provided with ball or roller bearings and be demountable at the hub or rim. The weight of the sweeper shall be distributed over the wheels in proportions that will assure proper traction for propulsion and steering under any operating conditions.

g) Tires. Unless otherwise specified, manufacturer's standard tires shall be furnished. Tire size shall be the manufacturer's current standard size for the sweeper specified. Tire capacities shall be not less than the individual wheel loadings imposed by the fully loaded sweeper and shall be in accordance with industry standards. When tube type tires are furnished, inner tubes shall be heavy-duty type and shall be of proper size for tires. When specified, tires shall be tube, tubeless, or solid type (refer to ORDERING DATA).

h) Brakes. The braking system shall be capable of safely controlling the machine under all conditions encountered in sweeping operations. A manually operated parking brake shall be provided.

i) Dust Control System. The dust control system shall be of the vacuum type and shall include a housing with skirt, a suction fan, dust filter, seals, ducts, and controls. Parts shall be constructed of tough and durable materials that provide long wear. Connections shall remain airtight when subjected to continuous vibration from sweeper operations. The suction fan shall move air from the main brush compartment through the filter in sufficient volume during sweeping operations to prevent escape of visible dust from brush compartment directly to the atmosphere. The suction fan shall operate at a constant speed regardless of sweeper travel speed. The suction fan shall be hydraulically driven.

The filter shall be of the dry type and shall have a capacity in balance with the output of the suction fan. All filters shall be replaceable, made of tear resistant natural or synthetic material, and protected from damage during operation. A power-operated shaker for cleaning the filters shall be provided. If not automatically controlled, a visual (i.e. light) warning system shall be provided to alert the operator that the filters require shaking.

A vacuum bypass device which will allow sweeping wet surfaces without damaging filters shall be provided.

j) Sweeping System. The sweeping system shall consist of a main brush, side brush or brushes, and a hopper. Conveniently located controls shall be furnished that permit the operator to raise the brushes clear from the surface to eliminate brush drag and wear when traveling. The machine shall sweep cleanly without dirt streaks. The outer edge of the side brush shall be visible to the operator to allow safe operation while sweeping close to obstructions. Brushes shall be mounted on sealed ball or roller bearings. The system shall incorporate floating and adjustable position brush holders. Both main and side brushes shall be hydraulically driven. The sweeping system shall be the direct throw type.

k) Main Brush. The main brush shall be supported in a carrier having provisions for adjusting the brush vertically from operator's position to any desired amount of floor contact. Brush or brush strips shall be replaceable in not more than 20 minutes with standard hand tools. The brush shall be one piece. Brush shall be not less than 14" in diameter. Bristles shall be not less than 3" in length. Unless otherwise specified, bristle material shall be synthetic fiber.

l) Side Brush. Unless otherwise specified, the sweeper shall be equipped with a right side brush. Side brush shall be adjustable for sweeping position and wear. Brush shall be capable of removing dirt and debris from along walls and curbs by sweeping the material into the path of the main brush. Brush and mounting shall be guarded by the frame or a bumper against fixed objects. Side brush shall be quickly replaceable by use of standard hand tools. Unless otherwise specified, brush bristles shall be of synthetic fiber. The side brush shall be driven at constant speed regardless of sweeper travel speed.

m) Hopper. The hopper shall be of sheet steel construction, designed to receive, hold, transport, and dump sweepings. The hopper shall be sealed against dust leakage and shall be capable of self-loading and retraining sweepings. With the hopper fully loaded and the brushes in a transport position, the sweeper shall be capable of being driven with no visible spillage of material. A power-operated means shall be provided for dumping the hopper to remove debris. (Power-operated means power lift and power hopper door opening with the operator remaining seated during the entire dump operation.) The sweeper shall have a multi-level high dump capacity. The dump height shall be as specified in Table 1, Performance Requirements.

n) Operator's Seat and Controls. The sweeper shall have a comfortable conveniently located operator's seat. Seat and back shall be cushioned and covered with a durable water-resistant material. All controls necessary for safe and efficient operation shall be furnished in a location convenient to the operator.

IV. WARRANTY

The contractor warrants to the owner all sweepers furnished under this specification will be new and of good material and workmanship and agrees to promptly replace any part or parts which by reason of defective material or workmanship shall fail under normal use, free of negligence or accident, for a minimum period of one (1) year from date of acceptance. Such replacement shall include all parts, labor and transportation free of any charge to the owner or his representative.

V. SERVICE, PARTS AND MANUALS

The contractor shall furnish complete written instructions for use, operation, and maintenance of this equipment.

VI. ACCEPTANCE EVALUATION AND QUALITY ASSURANCE

A. SWEEPING TEST

The sweeper shall be capable of sweeping a paved area without leaving visible loose sand or dirt particles.

B. MISCELLANEOUS PICK-UP TEST

Five (5) each of the following items shall be distributed over an area 50' long, with a width 6" less than the maximum sweeping swath.

1. Flat cardboard (small approx. 6" x 6")
2. Lightweight paper (flat 8½" x 11")
3. Flattened drink cans
4. Unflattened drink cans
5. Common nails (2½" long - 8d)
6. Stove bolts (1/4" x 2")
7. Steel flat washers, 1½" dia.
8. Cardboard box (approx 2" x 4" x 6")
9. Glass drink bottles
10. Random pieces of broken glass
11. Paint can lid
12. Wood block (small 1" x 3/4" x 6")
13. Wood block (large 2" x 4" x 10")
14. Flattened paper cups.

Sweeper, with brush to ground contact set as recommended by the contractor, shall be operated in one pass over the area. The quantity of the items collected in the hopper shall be compared with the quantity distributed over the test area to determine compliance with III.B.1. Performance.

VII. DELIVERY AND PAYMENT

Delivery of and payment for equipment furnished under this specification shall be in accordance with the terms and conditions stated in the Invitation for Bids. The contractor shall be responsible for any packing, packaging, or protection required to insure delivery in an undamaged condition.

VIII. ORDERING DATA (For Procurement Use Only)

Purchasers should exercise any desired option offered here and should specify the following in the Invitation For Bids:

1. Title, number, and date of this specification
2. Size sweeper
3. Type engine (L.P.G., diesel, or gas).
4. Type tires (if other than Mfrs Std; check with manufacturers or literature for availability before issuing IFB)
5. Lights required
6. Brush bristle material
7. Bumper
8. Optional filter system
9. Blower attachment
10. Enclosed cab with heater
11. If an on site demonstration is required.
12. The maximum sweep swath that is not to be exceeded, if any
13. Dry vacuum wand